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REMEDIAL DESIGN WORK PLAN
NATRONA LINDANE DUMP/ALSCO
COMMUNITY PARK SUPERFUND SITE
HARRISON TOWNSHIP, PENNSYLVANIA

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1.0 INTRODUCTION

1.1 PURPOSE

This Remedial Design (RD) Work Plan describes the work tasks necessary to design the Remedial Action at the Natrona Lindane Dump/Alsco Community Park Superfund Site (Site) located in Harrison Township, Pennsylvania. This Work Plan includes the technical requirements of the March 31, 1992 Record of Decision (ROD) issued by United States Environmental Protection Agency (USEPA) and incorporates design work elements and deliverables previously specified in the Consent Decree entered into between Elf Atochem North America Inc. (Elf Atochem) and the United States Government. The Consent Decree, ROD, the National Oil and Hazardous Substances Contingency Plan, 40 CFR Part 300 (the NCP), the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. Section 9601 et. seq. (CERCLA), the "Superfund Remedial Design and Remedial Action Guidance" (OSWER Directive 9355.0-4A, June 1986), and any applicable USEPA guidelines shall be followed in designing the remedial action at the Site. In the event and to the extent that the provisions of this RD Work Plan conflict with any provisions of the Consent Decree or ROD, the provisions of the Consent Decree or ROD shall control.

1.2 REQUIREMENTS

Section VI.B of the Consent Decree requires Elf Atochem to submit to USEPA, within 60 days of EPA's acceptance of the Supervising Contractor, a work plan for the design of the remedial action at the Site (Remedial Design Work Plan), a Quality Assurance Project Plan (QAPP), and a Health and Safety Plan for field activities in support of the remedial design.

In addition the Consent Decree required that this RD Work Plan include plans, schedules, and methodologies for implementation of all necessary remedial design and pre-design tasks, including, but not limited to: a Sampling and Analysis Plan (SAP); RD Permitting Requirements Plan; RD Contingency Plan; work plans and schedules for the design and implementation of treatability studies; and plans and schedules for the preparation and submission of preliminary, pre-final, and final design submittals. The SAP typically consists of the QAPP in combination with the

Field Sampling Plan. However, as discussed later, only a Quality Assurance Project Plan is necessary for this RD Work Plan. A Treatability Study Construction Quality Assurance Project Plan is required as necessary for treatability study construction. In addition, the RD Work Plan is to include an expeditious schedule for completion of all components of the RD.

Some of the plans are separate documents, however, they are included in this RD Work Plan submittal by reference and will be delivered to the USEPA concurrently with this work plan. These separate documents include: Health and Safety Plan for Remedial Design Activities; Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study; and Geotechnical Investigation and Slope Stability Analysis Work Plan. The Remedial Design Contingency Plan is included in this work plan as an appendix. The Treatability Study Quality Assurance Project Plan and the Treatability Study Construction Quality Assurance Project Plan are included as appendices to the Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study.

2.0 BACKGROUND INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

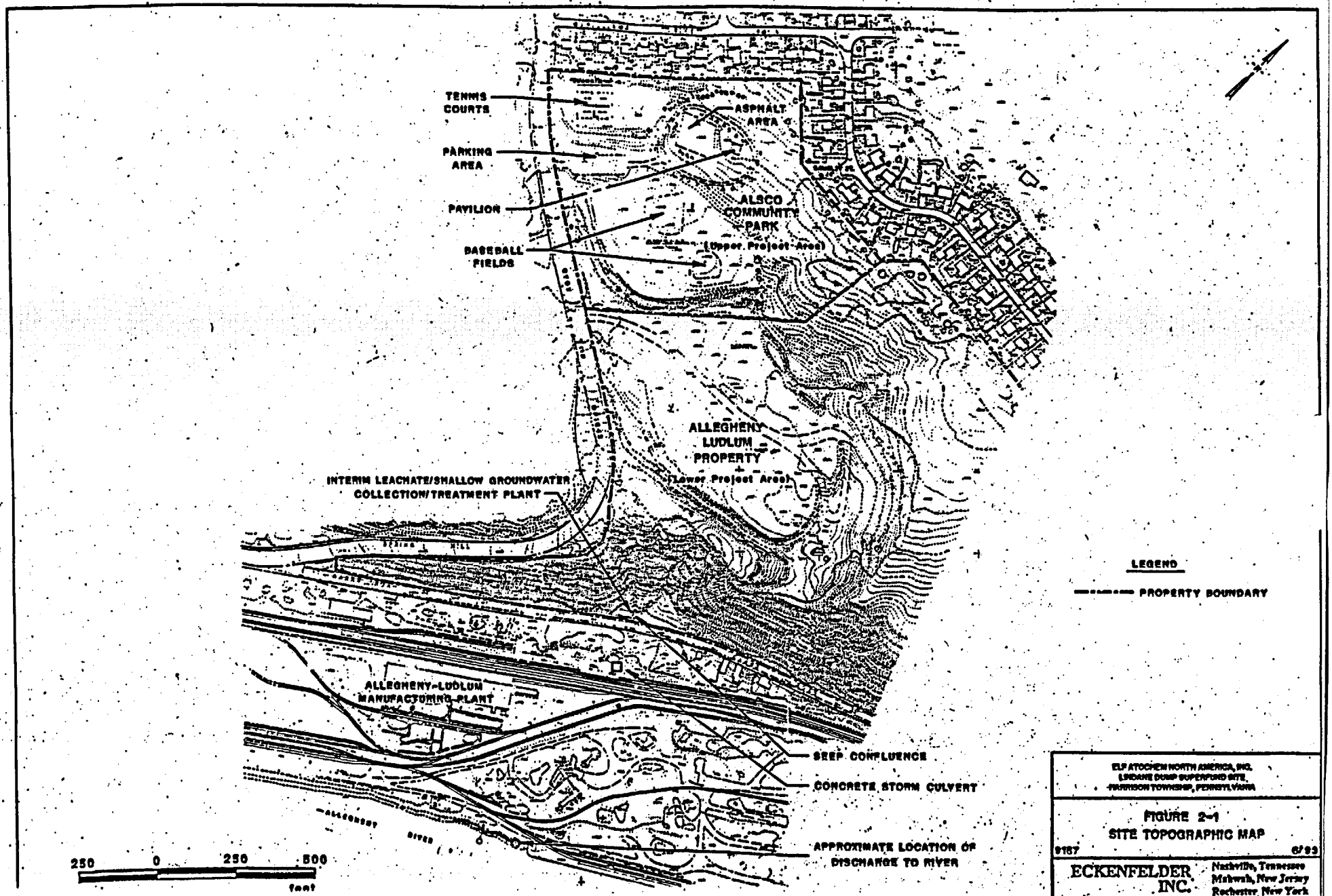
The Site is located in Harrison Township near Natrona, Pennsylvania, in the Allegheny River valley. Both Harrison Township and Natrona are in Allegheny County on the northwestern side of the Allegheny River. The Site is located approximately at river mile 25, some 20 road miles northeast of downtown Pittsburgh.

The project has been described as the upper project area and the lower project area. These areas are illustrated in Figure 2-1. Alsco Community Park (designated as the upper project area) consists of 14.3 acres zoned as recreational property and maintained by Harrison Township, Pennsylvania. The Park includes portions of what was formerly used as an industrial waste disposal site. The property immediately to the south of the Park (the lower project area) consists of approximately 47.5 acres, and is owned by the Allegheny Ludlum Corporation. Until the mid-1980s, portions of this parcel of land (the lower project area) were used for waste disposal.

2.2 SITE HISTORY

An overall chronological history of the Site was presented in the ROD and is summarized in Table 2-1. Included in this table are operational, investigational, and regulatory summaries pertaining to the Site's history. Following is a brief description of the overall history at the Site.

In October 1981, the U.S. Environmental Protection Agency (USEPA) proposed to include the Site on the National Priority List (NPL). This listing was finalized in September 1983. Preliminary environmental assessments and subsequent monitoring programs were conducted between 1976 and 1985. In September 1987, Atochem North America, Inc. (Atochem, formerly Pennwalt) entered into a Consent Order and Agreement (COA) with the Pennsylvania Department of Environmental Resources (PADER) to conduct a Supplemental RI/FS. Among the requirements of the COA was the preparation of a Supplemental RI report. This document,



ELF ATOCHEM NORTH AMERICA, INC.
LINDANE DUMP SUPERFUND SITE
HARRISON TOWNSHIP, PENNSYLVANIA

FIGURE 2-1
SITE TOPOGRAPHIC MAP

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ECKENFELDER INC. Nashville, Tennessee; Mahwah, New Jersey; Rochester, New York

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TABLE 2-1

CHRONOLOGICAL HISTORY OF NATRONA LINDANE DUMP/ALSCO COMMUNITY PARK SUPERFUND SITE

Approximate Dates	Activity
1850 - 1920	Penn Salt Manufacturing Co. (later Pennsalt, then Pennwalt, then Atochem, then Elf Atochem) initiated the manufacture of chemicals. Coal mining also performed. Sulfuric acid was produced using the chamber process. Tailings from coal mining, cinders (bottom ash) from electric and steam power generation disposed of on site.
1920 - 1947	Inorganic chemical products produced, including alumina (until 1940) by the Bayer process. Red mud and red cinder disposed of on site. Red mud not disposed of on site after about 1940.
1947 - 1959	Technical BHC (from 1947-1955), DDT (DDT production occurred for approximately one year and was discontinued in early 1950s), and other inorganic chemical products produced. BHC and DDT residuals, cryolite ore tailings, and bottom ash disposed of on site.
1959 - 1965	Elf Atochem chemical plant ceased operations and property lay dormat.
1965 - mid 1980s	Elf Atochem sold Natrona property to Allegheny Ludlum. From mid-1960s to mid-1980s, Allegheny Ludlum disposed of constructin debris, rubber tires, coke, slag, and industrial waste treatment plant sludge.
1976 - 1977	Alsco Community Park constructed on upper project area (property donated by Allegheny Ludlum).
1976 - 1981	Preliminary environmental monitoring activities conducted by or at request of the PADER, Allegheny County Health Department, and Harrison Township. Activities included subsurface investigations, seepage/surface water sampling, ambient air monitoring.
October 1981	USEPA proposed site to be listed on NPL.
1981 - November 1982	ECKENFELDER INC. (then AWARE Incorporated) retained by Elf Atochem to conduct an environmental assessment to characterize groundwater, surface water, and ambient air.
September 1983	Final (promulgated) NPL listing of project site.
June - December 1983	Seepage and Allegheny River monitoring performed by Elf Atochem.

TABLE 2-1 (Continued)

CHRONOLOGICAL HISTORY OF NATRONA LINDANE DUMP/ALSCO COMMUNITY PARK SUPERFUND SITE

Approximate Dates	Activity
1984 - 1985	In 1984, interim remedial measures implemented by Elf Atochem, including installation of: subsurface drain system to collect groundwater seepage; improved stormwater runoff conveyance system, temporary modular GAC system to treat leachate from seep collection system. Also conducted quarterly monitoring program for interim leachate collection/treatment plant system. Backwash system installed in late 1984.
1985	Draft Supplemental RI/FS Work Plan submitted to the PADER and the USEPA.
1987	Elf Atochem entered into a Consent Order and Agreement (COA) with the PADER to conduct supplemental RI/FS; the COA also included effluent limits for the interim leachate collection/treatment plant system. Work Plan was subsequently revised in July 1987, and approved by the PADER and the USEPA on October 18, 1987.
November 1987	Supplemental RI/FS activities began.
August 1988	Interim Hydrogeologic Report (Task 6) submitted to the PADER and the USEPA; Phase III hydrogeologic Work Plan included.
October 1988	Phase III Hydrogeologic Work Plan approved by the PADER and the USEPA.
November 1988	Phase III Hydrogeologic Work Plan implementation began.
May 1989	Draft Supplemental RI Report submitted to the PADER and the USEPA.
September 1989	Comments on Supplemental RI Report from the PADER and the USEPA received by Atochem.
January 1990	Revised Final Supplemental RI Report submitted to the PADER and the USEPA for approval.
April 1990	Draft Baseline Risk Assessment submitted to the PADER and the USEPA.
June 1990	Revised Final Supplemental Remedial Investigation Report approved by the PADER and the USEPA.

TABLE 2-1 (Continued)

CHRONOLOGICAL HISTORY OF NATRONA LINDANE DUMP/ALSCO COMMUNITY PARK SUPERFUND SITE

Approximate Dates	Activity
July 1990	Lower project area surficial soils are sampled as requested by PADER and USEPA.
August 1990	Formal comments on Baseline Risk Assessment from the PADER and USEPA received by Atochem.
September 1990	Interim Feasibility Study (FS) report submitted to the PADER and USEPA.
October 1990	Revised Final Baseline Risk Assessment Report submitted to the PADER and USEPA for approval.
November 1990	Comments on the Interim FS report received from the PADER and USEPA.
December 1990	Revised Final Baseline Risk Assessment Report approved by the PADER and the USEPA.
August 1991	Draft FS submitted to PADER and USEPA.
December 1991	USEPA published a Proposed Remedial Action Plan
January 1992	USEPA holds Public Meeting on Proposed Plan
January 1992	Formal comments on the Draft FS from the PADER and USEPA received by Atochem.
February 1992	Final FS submitted to the PADER and USEPA.
March 1992	Record of Decision (ROD) issued.
April 1992	Elf Atochem and USEPA enter into Consent Decree for remedial design/remedial action.
April 1993	Consent Decree lodged in court.
April 1993	Consent Decree entered by court.

"Supplemental Remedial Investigation Report, Natrona Alsco Community Park," was completed in January 1990. A risk assessment (the" Revised Final Baseline Risk Assessment Report") was completed in October 1990. Based upon the findings of these two reports a feasibility study (FS) was conducted and a Draft FS Report was submitted to the regulatory agencies in August 1991. Subsequently, the proposed plan was developed based upon the recommendations of the Final FS Report (ECKENFELDER INC., February 1992) and issued by the USEPA, Region III in December 1991. A public meeting was later held in January 1992 which resulted in minor questions and comments which were addressed.

On March 31, 1992, the USEPA issued the Record of Decision (ROD) for the Site. The key components of the selected remedial alternative were two-fold.

- Implementation of a multi-layer cap over approximately 18 acres of the Site.
- Optimization of the existing leachate/shallow groundwater treatment system.
- Surface water and groundwater monitoring and institutional controls.

Essentially, the ROD selected the remedial alternative recommended by the Final Feasibility Study Report with some minor modifications to the sloped area of the proposed cap.

In April 1993 Elf Atochem entered into a Consent Decree with the USEPA to prepare the remedial design and conduct the remedial action at the Site.

2.3 SITE CONDITIONS

The nature and extent of site-related contamination has been evaluated by a number of investigations; the most recent being the Supplemental Remedial Investigation Report (ECKENFELDER INC., May 1989). The investigations identified the media of concern to be leachate/shallow groundwater, subsurface material, and to a limited extent, surficial soils.

2.3.1 Leachate/Shallow Groundwater

In 1984, Elf Atochem completed the installation of an interim leachate collection/treatment system at the foot of the project site along Karns Road. The annual average daily flow rate of leachate collected and treated by this system ranged from 73,900 gpd in 1985 to 35,700 gpd in 1988. Previous investigations have indicated that this system collects and treats an estimated 97 percent of the total groundwater flow from the Site and removes an estimated 99+ percent of the constituent mass from the discharge to the alluvial/shallow bedrock groundwater which migrates off site. The rationale and supporting information for groundwater flow and mass removal efficiency were originally presented in documents submitted to and approved by the USEPA and PADER and include Section 7 of the Supplemental Remedial Investigation Report, Sections 3.3.4 and 3.4 of the Final Risk Assessment Report, and Section 2.3.1.2 of the Final Feasibility Study Report.

Organic constituents of interest have been detected at the downgradient edge of the Site along Karns Road. These constituents have been detected primarily in the leachate/shallow groundwater and to a lesser extent (below Federal Drinking Water Standards) in the alluvial/shallow bedrock groundwater. The principal constituents detected consist of alpha-BHC, gamma-BHC, delta-BHC, 4,4'-DDT, benzene, and chlorobenzene.

2.3.2 Subsurface Material

Based upon historic maps and aerial photographs of the project site, stratigraphic mapping, exploratory borings, monitoring well borings, exploratory trenching, and surface geophysical surveys, an isopach map was prepared which depicts the estimated areal extent and thickness of fill. At the deepest point, it is believed that the fill is approximately 90 ft or more thick. It is estimated that the Site contains a total of approximately 1.2 mil cu yd of fill, 40 percent of which consists of red mud and/or red cinder. The red mud was generated from the production of alumina at the plant and is a very fine grained material with a high iron content. The red cinder consists of heavily oxidized mine and/or ore tailings or slag. Most of the remaining 60 percent of fill volume is believed to consist of unoxidized ore tailings, slag, construction waste, industrial waste treatment plant sludge, coke, rubber tires, gravel, and terrace deposits from the hillside north of the lower project area. The

BHC residuals and waste sulfuric acid containing DDT which were placed at the Site are believed to represent only a relatively small percentage of the total volume of fill which was deposited.

In portions of the lower project area, materials encountered in the exploratory trenches included a silty sand and gravel cover at the surface and concrete, bricks, and lumber in a silt, sand, and gravel matrix. In general, various amounts of metal/slag were encountered at various depths. In several of these trenches, various types of refuse were encountered, including paper, plastic, glass, etc. Constituents detected most frequently and in most fill samples were the BHC isomers, DDT, DDE, and DDD, as well as the metals arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. It is believed that the waste constituents detected at the Site originated from the manufacture of BHC, the manufacture of DDT, coal/coke, iron and steel making, and domestic refuse and construction or demolition debris.

2.3.3 Surficial Soils

The surficial soils in certain portions of the Community Park were determined to contain BHC isomers, DDT, DDE, and DDD. Several drainage ditch sediment samples located on the Site were found to contain BHC isomers and DDT. In addition, stormwater runoff samples collected at the Site during the 1982 Environmental Assessment contained trace levels of BHC isomers. DDT was not detected in the stormwater runoff samples.

Based upon physical characteristics and visual observations, the existing soil cover at the Community Park consists of low plasticity clays and silts. While the existing soil cover is relatively impermeable, in some areas the soil cover is sparse. No significant erosion areas were noted except along the steep slopes between the Community Park and the lower project area and at the base of the lower project area.

2.3.4 Other Environmental Media

Several of the other environmental media near the Site were sampled during the RI project. These media included surface water and sediment from the Allegheny River, and ambient air quality at the Site. None of the constituents of interest were detected in river water samples collected adjacent to the Clearview Water intake and only one sample had a trace level of delta-BHC from a sample location just downstream of the interim leachate collection/treatment plant discharge. In several of the Allegheny River Sediment samples, only trace levels of BHC isomers and DDT were detected. The results from air quality monitoring in the upper project area were all below method detection limits.

2.4 SUMMARY OF SITE RISKS

A Baseline Risk Assessment was performed at the Site in accordance with guidelines established by USEPA. Indicator compounds were selected and associated risks were calculated for the different affected media and potential exposure routes at the Site. The results of this assessment were reported in detail in the Revised Final Baseline Risk Assessment Report (ECKENFELDER INC., October 1990).

All the human health risks quantified in the baseline risk assessment are within or below acceptable ranges of potential carcinogenic and noncarcinogenic risk levels. However, the USEPA has concluded that actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected by the Record of Decision, may present a future endangerment to the public health, welfare, or the environment.

2.5 REMEDY SELECTION PROCESS

The Final Feasibility Study Report (ECKENFELDER INC., February 1992) defined the basic remedial objectives for the Site. Technologies which could be useful in attaining these objectives were identified and subjected to an initial screening to select the most promising approaches. The screening process eliminated potential technologies, leaving source control and migration control technologies. These remaining technologies were then assembled into a group of remedial action alternatives which were subjected to a detailed analysis. The five alternatives were

evaluated by a comparative analysis technique according to the nine evaluation criteria contained in the NCP. These included overall protection of human health and the environment; compliance with Applicable or Relevant and Appropriate Requirements (ARARs); reduction of toxicity, mobility, or volume through treatment; implementability; short-term effectiveness; long-term effectiveness; cost; community acceptance; and state acceptance.

Based upon all relevant considerations, USEPA selected an alternative representing a combination of FS Alternatives 9a and 10a, "Clay and Soil Cap" and "Multi-layer Cap," respectively. The use of the multi-layer cap will take precedence over the use of the clay and soil cap. The clay and soil cap will be used only in areas of the Site that are, based on an engineering evaluation, too steep for placement of a multi-layer cap including a synthetic liner. Surface water and groundwater monitoring and institutional controls are also components of the selected alternative. The selected alternative includes optimization of the leachate/shallow groundwater collection and treatment system, which involves the continued use of the leachate/shallow groundwater collection system and upgrading the existing leachate/shallow groundwater treatment system (LGTS). Although no conceptual modifications to the leachate/shallow groundwater collection system are anticipated, routine system maintenance will be conducted such that the system's current effectiveness continues or is possibly enhanced.

3.0 DESCRIPTION OF THE SELECTED REMEDY

3.1 GOALS

The primary goals of the selected remedy are to minimize human contact, ingestion, and inhalation of contaminated soils, continue to prevent human exposure to subsurface materials, reduce transport of constituents via stormwater runoff and erosion, reduce leaching of constituents via incidental precipitation, and minimize human contact with constituents and transport of the constituents in downgradient groundwater. Additional goals are to meet the statutory preferences for remedies as specified in CERCLA.

3.2 SUMMARY OF REMEDY

The remedy, as selected in the ROD, is comprised of the following components:

- Installation of a multi-layer cap over approximately 18 acres of the Site (except that a clay and soil cap will be installed over areas too steep for multi-layer cap installation) with appropriate vegetation, surface water drainage, and provisions for long-term monitoring and maintenance.
- Optimization of the leachate/shallow groundwater treatment system.
- Institutional controls to restrict use of impacted groundwater and access control by installation of a security fence around the lower project area.
- Restoration of park facilities on upper project area.
- Groundwater and surface water monitoring program.

The remedial measures presented will supplement the existing leachate/shallow groundwater collection and treatment system installed in 1984. This system includes a french drain system located at the toe of the Site to collect leachate/shallow groundwater and an interim system for leachate/shallow groundwater treatment.

3.3 DETAILED DESCRIPTION

3.3.1 Multi-layer Cap

The multi-layer cap is expected to consist of a 1 to 2 foot thick relatively impermeable clay layer, although the final thickness as well as alternative materials (.e.g., a geosynthetic clay layer substitute) will be evaluated during the remedial engineering design. The clay will be overlain by a synthetic membrane, a drainage layer with filter fabric, 2 feet of earthen backfill material, and 1 foot of topsoil. The minimum slope of the cap (3 to 5%) will be adequate to promote drainage. The maximum slope of the cap will be established during remedial design and will be based on cap material properties (e.g., interface friction values, unit weight, etc.), veneer stability analysis, and slope stability studies.

The clay selected for the multi-layer cap construction will meet the classification of CH or CL under the criteria for the Unified Soil Classification as determined by the provisions of the American Society for Testing and Materials (ASTM) D2487, Latest Edition. The clay will have an overall permeability of 1.0×10^{-7} cm/sec or less following placement and compaction.

The synthetic membrane will be placed directly on top of the clay layer to further prevent infiltration of incidental precipitation. The drainage layer will consist of a minimum 1-foot thick layer of well draining soil having a minimum hydraulic conductivity value of 1×10^{-3} cm/sec or an alternate drainage method with an equivalent flow capacity. A geonet material may be substituted for the well-draining soil. In addition to the geonet material selected, a filter fabric will be installed above the geonet material to prevent fine graded material from entering and blocking the void spaces.

A surface water control plan will be developed and implemented during the cap construction to prevent the off site migration of any contaminated water, soil, or sediments.

If a clay and soil cap is required in steep areas in lieu of a multi-layer cap, the cap will consist of a 2-foot clay layer, geotextile filter fabric, a drainage layer, 2 feet of clean earthen backfill material, and a 1-foot layer of topsoil.

Vegetation will be established on the newly capped area upon completion of construction. The vegetative cover will be capable of stabilizing the soil surface and preventing erosion. Mulch will be applied to newly vegetated areas to control erosion and promote germination of seeds and increase moisture retention of the soil.

The final cap design and construction will meet the relevant and appropriate requirements of Commonwealth of Pennsylvania Hazardous Waste Regulations as contained in 25 Pa. Code 264 §§ 301-310.

Surface drainage for the entire Site will be designed and constructed in a manner that will control the amount of overland flow in an effort to minimize surface erosion of the cap and to lessen potential infiltration through the cap. The drainage system for the entire Site will also be designed to avoid impacting the existing surface drainage from adjacent land owners. The design basis for the drainage system will be the 24 hour, 25 year rainfall event.

3.3.2 Optimization of Leachate/Shallow Groundwater Treatment System

The selected remedy includes the continued collection and treatment of shallow groundwater emanating at the base of the Site along Karns Road. The existing LGTS will be modified to allow the resulting discharge to meet the PADER proposed final NPDES effluent discharge limits. The applicable discharge limits for the LGTS are presented in Table 3-1 of this work plan.

3.3.3 Institutional and Access Controls

Institutional controls to prevent the permitting and construction of groundwater wells at the Site or downgradient of the Site (between the Site and the Allegheny River) will be implemented through the use of deed restrictions. In addition, a security fence around the lower project area will be installed to prevent possible human contact with seeps and contaminated soils and to protect the treatment system and equipment.

TABLE 3-1

NPDES EFFLUENT DISCHARGE LIMITS
LEACHATE/SHALLOW GROUNDWATER TREATMENT SYSTEM

Parameter	Monthly Ave. (mg/l)	Daily Max. (mg/l)
Flow (MGD)	0.0304	-
Suspended Solids	20	40
Alpha-BHC	0.01	0.02
Beta-BHC	0.01	0.02
Delta-BHC	0.01	0.02
Gamma-BHC	0.01	0.02
Benzene	0.01	0.02
4,4-DDT	0.0003	0.0005
pH	between 6.0 and 9.0 S.U. at all times	

3.3.4 Groundwater and Surface Water Monitoring

An appropriate surface water and groundwater monitoring plan will be developed to specify the location and number of groundwater and surface water monitoring points. This plan will be reviewed as part of the required five year site review per the requirements of the ROD.

3.3.5 Restoration of Park Facilities

The park facilities located on the upper portion of the Site (Alsco Community Park) will be reconstructed after completion of the Site cap. The new park facilities will be constructed such that they do not compromise the integrity of the cap. No trees removed to facilitate cap construction will be replaced on the new cap area.

3.4 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The ROD identifies specific ARARs with which the remedy is to comply and includes the waiver of the requirement for remediation of groundwater to background levels. The ARARs listed by the ROD are incorporated into this work plan by reference.

4.0 REMEDIAL DESIGN SCOPE OF WORK

The scope of the Remedial Design for the Site will consist of pre-design activities and remedial design of two components: a low permeability cap and modification of the existing leachate/shallow groundwater treatment system (LGTS). The tasks to be performed during the pre-design and the remedial design are described below.

4.1 PRE-DESIGN SCOPE

4.1.1 Remedial Design Work Plan (This Document)

This Remedial Design (RD) Work Plan is being prepared for submittal to the USEPA, Region III. The work plan is consistent with the ROD, the Consent Decree, the NCP, CERCLA, "Superfund Remedial Design and Remedial Action Guidance" (OSWER Directive 9355.0-4A, June 1986), "Guide for Conducting Treatability Studies Under CERCLA" (EPA/540/2-89/058, December 1989), "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA/540/G-89/004, October, 1988), "Data Quality Objectives for Remedial Response Activities" (OSWER Directive 9355.0-7B, March 1987), "EPA NEIC Policies and Procedures Manual" (EPA-330/9-78-001-R, May 1978, revised August 1991), "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS 005/80, December 1980), and "A Compendium of Superfund Field Operations Methods" (OSWER Directive 9355.0-14, December 1987).

The RD Work Plan presents the schedule for the RD tasks and deliverables. The schedule is presented in Section 4.3.

4.1.2 Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study Work Plan (Separate Document)

A pilot-scale treatability is necessary to generate final design criteria for optimizing the existing leachate/shallow groundwater treatment system. The purpose of conducting the pilot-scale continuous flow treatability study is to provide design criteria for equipment sizing, process sequence, operating variables, and operating costs.

A work plan for the treatability study is being submitted under separate cover to the USEPA Region III along with the RD Work Plan. The "Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study for the Lindane Dump Superfund Site" (Treatability Study Work Plan) included with this submittal sets forth the protocols and methodologies for the study as well as an expeditious schedule for the completion of the study. The work plan is consistent with the guidance provided in "Guide for Conducting Treatability Studies Under CERCLA" (EPA/540/2-89/058, December 1989).

As previously indicated by Elf Atochem North America, Inc. to the USEPA, Region III in correspondence dated October 11, 1993 and to the Pennsylvania Department of Environmental Regulation (PADER) by copy of that letter, treatability studies were planned to begin in late October 1993. As stated in that letter, immediate initiation of treatability studies were deemed necessary due to operational difficulties with the interim leachate treatment system. As planned, treatability studies began in October 1993 and the on-site portion of this study has been completed. Treatability study work completed to date has been conducted in accordance with the Treatability Study Work Plan included under separate cover with this RD Work Plan submittal package. As well, treatability study work on-going and yet to be done will be conducted in accordance with the Treatability Study Work Plan and the schedule presented in Figure 4-1 of this RD Work Plan.

4.1.3 Geotechnical Investigation and Slope Stability Analysis Work Plan (Separate Document)

A geotechnical investigation and slope stability analysis will be performed to evaluate the stability of the existing Site and the Site configuration resulting from cap installation. The first objective of this task will be to assign physical properties to the various types of fill and natural soil underlying the fill materials by conducting a geotechnical investigation and laboratory testing program. The investigation will be limited to the natural soil and waste material overlying the rock and will not include investigation or stability/integrity analyses of the underlying geology or the coal mines and shafts located in the area (the majority of which are not mapped). The next objective is to perform stability analyses using the physical properties of the waste/soil materials.

A Work Plan for the investigation, laboratory testing, and stability analysis will be submitted to the USEPA Region III under separate cover, along with the RD Work Plan. The Geotechnical Investigation and Slope Stability Analysis Work Plan sets forth the protocols, ASTM standsards, and methodologies for the study as well as a schedule for its completion.

4.1.4 Treatability Study Construction Quality Assurance Plan

A construction quality assurance plan for the treatability study is included as an appendix to the "Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study".

4.1.5 Health and Safety Plan for Field Remedial Design Activities (Separate Document)

A site Health and Safety Plan (HSP) has been prepared for field activities which will be conducted during the Remedial Design process. The Health and Safety Plan is being submitted to the USEPA Region III as a separate document in the RD Work Plan submittal package.

4.1.6 Quality Assurance Project Plan

For field sampling, a sampling and analysis plan, consisting of a quality assurance project plan (QAPP) and a field sampling plan, is required. For this RD Work Plan, the field sampling and analytical requirements are specified in the two support work plans involving field sampling; the Geotechnical Investigation and Slope Stability Analysis Work Plan and the Work Plan for Pilot-Scale Leachate/Shallow Groundwater Treatability Study.

To support the Pilot-Scale Leachate/Shallow Groundwater Treatability Study, a quality assurance project plan (QAPP) has been included in the Treatability Study Work Plan to specify data quality objectives (DQOs) and protocols for sample collection, transportation, analysis, validation, and reporting. Quality assurance

associated with the geotechnical investigation is addressed by the geotechnical investigation work plan.

4.1.7 Supplemental Land Surveying

Although topographic maps are available for the Site and surrounding areas, a limited supplemental surveying program is needed. Supplemental surveying will be required to support three tasks including the geotechnical investigation/slope stability analysis, site cap design and groundwater treatment facility design. Surveying work, although non-intrusive, will be performed by personnel having appropriate OSHA training.

Although the topographic maps will not be comprehensive land surveys of the entire Site, they will be sealed by a registered land surveyor. Results of supplemental land surveying will be prepared for submittal to the USEPA as part of the pre-final design submittal.

4.1.8 Remedial Design Permitting Plan

Certain environmental permits/approvals are needed for the RD field activities. They are identified below along with their current status.

Description	Status
• Notification of Regulated Waste Activity and Generator Identification Number	ID Number Issued
• Discharge of Treated Water	Interim levels approved under NPDES permit for existing treatment system

4.1.8 Remedial Design Contingency Plan

The Remedial Design Contingency Plan will address protection of the local population in the event of an accident or emergency during RD field activities at the

Natrona Alsco Community Park Superfund Site, Harrison Township, Pennsylvania. The RD Contingency Plan is consistent with the requirements specified in Appendix B of USEPA's Interim Final "Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties" (OSWER Directive 9355.5-01, April 1990) and is included as Appendix C of this RD Work Plan.

4.2 DESIGN SCOPE

The Remedial Design phase of the work will involve preparation and submittal of technical plans and specifications at various stages of completion (preliminary, pre-final, and final) as specified by the Consent Decree and as generally described in the USEPA "Superfund Remedial Design and Remedial Action Guidance Manual" (OSWER Directive 9355.0-4A, June 1986). Additionally, this project will involve the development and submittal of the following support plans for use during remedial activities.

- Specifications for Decontamination Plan
- Specifications for Health and Safety Plan
- Sampling and Analysis Plan
- Remedial Action Permit Requirements Plan
- Remedial Action Contingency Plan
- Remedial Action Construction Plan
- Construction Quality Assurance Plan
- Operation and Maintenance Plan
- Groundwater and Surface Water Monitoring Plan

In accordance with the Consent Decree, three deliverables will be prepared and submitted to the regulatory agencies during the remedial design phase of the project. These deliverables are the Preliminary Design, Pre-Final Design, and Final Design and represent Remedial Design Report completion stages of 30 percent, 90 percent; and 100 percent, respectively. The content of each deliverable is discussed below.

4.2.1 Preliminary Design

The preliminary design submittal will represent approximately 30 percent completion of the design effort, will identify the major components of the final design, and will include the following:

- Results of the treatability study
- Geotechnical investigation data and preliminary findings
- Preliminary design criteria
- Project delivery strategy
- Preliminary plans, drawings, and sketches
- Required technical specifications in preliminary form
- Preliminary construction schedule
- Preliminary remedial action permitting acquisition plan
- Preliminary concept of groundwater monitoring system

It is anticipated that the components of the 30 percent design deliverable would contain the following information.

Treatability Study. The draft report will be submitted with the preliminary design and contain preliminary sizing of groundwater treatment system equipment. Treatment process optimization and evaluation of standard equipment sizes available through vendors to allow competitive bidding may result in modifications to preliminary process equipment sizing as the design proceeds.

Geotechnical Studies. The draft report will be submitted with the preliminary design submittal to the USEPA.

Design Criteria. Criteria to be presented include that typically used for the design of stormwater management systems (pipes, drainage swales, etc.), thickness of cap media, seismic considerations, calculation of storm water flows, treatment building design loads, etc. In addition, design criteria based on initial evaluations of the geotechnical and groundwater treatability studies will be presented on a preliminary basis. These design criteria would constitute the beginning of the engineering design analysis.

Project Delivery Strategy. A project delivery strategy will be submitted which will consist of a description of the contents of the Remedial Design Report (a compilation of information to be included in the Pre-Final submission). The strategy will also include a preliminary list of anticipated drawings, and the anticipated means of implementing the remedial action (i.e., the number of prime contractors and their responsibilities, work to be done by Elf Atochem, equipment to be purchased by Elf Atochem, etc.).

Preliminary Plans, Drawings, and Sketches. Preliminary plans, drawings, and sketches will be developed and will primarily represent the configuration of the cap and the groundwater treatment system. It is expected that the following general categories will be represented on the preliminary drawings:

- Preliminary site plan(s) of existing conditions
- Preliminary site plan(s) of capped area
- Preliminary site plan(s) of groundwater treatment system
- Preliminary hydraulic profiles
- Preliminary process and instrumentation diagrams

Detailed design of the components and the ancillary components (the treatment building, and other equipment) will be included in the Pre-Final submission. By the Pre-Final submittal construction plans will provide detail sufficient for bidding and actual construction by a qualified Contractor including plan views, profiles, cross-sections, details, instrumentation, etc.

Specifications. Outline technical specifications will be prepared that will address various aspects of the work and supplement the drawings. The specifications will include general requirements and other related items. As part of the outline general requirements an outline construction Health and Safety Plan Specification will also be included.

Outline technical specifications will cover the following general topics, which will be further refined during actual development of the specifications:

- Clearing and grubbing
- Demolition

- Site preparation
- Earthwork
- Geosynthetics
- Piping and manholes
- Drainage structures
- Sediment and erosion control
- Fencing
- Landscaping
- Restoration of structures
- Concrete
- Groundwater treatment equipment
- Pre-engineered buildings

The technical specifications will be prepared in a typical, standardized Construction Specifications Institute (CSI) format and will define:

- Description of work
- Related work
- Quality assurance/control
- Submittals
- Materials (referenced to standard specifications where appropriate, e.g., ASTM)
- Construction or execution (again referenced to standard specifications where appropriate and including quality control procedures)
- Defective work

Preliminary Construction Schedule. A preliminary remedial action schedule will be presented. It is currently anticipated that it will be developed using computer software known as Timeline® which is utilized in conjunction with Microsoft Windows® in an MS-DOS® operating system. This schedule will be subject to change and further delineation during the remainder of the remedial design.

Preliminary Permit Acquisition Plan. The preliminary permit acquisition plan to be submitted will identify and briefly describe the permits that are known to be needed for the implementation of the remedial action, along with anticipated

acquisition time frames. All permits associated with the daily construction activities are assumed to be the responsibility of the remedial action contractor(s) and will not be included.

4.2.2 Pre-Final Design

The Pre-Final Design submittal will be prepared to represent 90 percent completion of the design effort. It will include the following components:

- Remedial design plans and specifications, including borrow source requirements
- Operation and Maintenance Plan for Leachate/Shallow Groundwater Collection and Treatment System and Cap
- Remedial Action Construction Plan
- Remedial Action Construction Quality Assurance Plan (CQAP)
- Sampling and Analysis Plan
- Groundwater and Surface Water Monitoring Plan
- Specifications for Contractor preparation of a Health and Safety Plan (included in specifications)
- Specifications for Contractor preparation of the Decontamination Plan (included in specifications)
- A Remedial Action Permitting Requirements Plan
- A Remedial Action Contingency Plan
- Engineering Design Analysis and Calculations

Pre-Final design plans and specifications will be developed and submitted. These plans will include cap plan and sections and details, treatment building plans, site plans, drainage plans, site preparation and soil erosion control plans, water treatment equipment and instrumentation plans, and associated structural, mechanical, and electrical plans, sections, and details. Specifications will include general requirements, sequence of construction (including fence installation), type of construction, services and materials to be supplied, quality control procedures, supplemental conditions, special requirements, and other contractual requirements, in addition to the technical specifications. The outline specifications provided in the preliminary design submittal will be expanded into complete specifications for materials, equipment, and procedures. The presentation of the plans and

specifications will be consistent with the outlined project delivery schedule. Results of the treatability study will dictate process design, while specific equipment and process conveyance media and other details will be finalized in the plans and specifications.

An Operation and Maintenance Plan (to be used after the remedial action is complete) will be developed and submitted. This plan will describe the anticipated operation and maintenance requirements for the leachate/shallow groundwater collection and treatment system. It will also include maintenance requirements for the cap. Key components of the plan will include development of O&M manuals, O&M tasks and their frequencies, monitoring tasks (both on site and remote), record keeping tasks, reporting tasks, and a Health and Safety Plan for operation.

A remedial action Construction Quality Assurance Plan or CQAP will be provided with the Pre-Final Design deliverable and will set forth provisions for the following activities:

- Review of contractor qualifications
- Review of contractor plans
- Monitoring compliance of contractor with plans, specifications, and contract terms, including observations and tests to be used in monitoring construction
- Monitoring and reporting the progress of the work
- Review and approval of contractor(s) claims for payment
- Review and evaluation of change order requests
- Compilation of project documentation

The CQAP will also include a description of activities, project organization, authority and responsibilities of project staff, special procedures, and schedule of activities.

A Field Sampling Plan will be developed and submitted. This plan will be directed at monitoring construction performance and will include air sampling, other health and safety related monitoring requirements, and equipment and material performance monitoring.

A Groundwater and Surface Water Monitoring Plan will be developed. This monitoring will measure progress towards meeting performance standards. The monitoring plan will specify sampling methods, monitoring frequencies, analytical parameters, and report requirements.

As part of the remedial design plans and specifications, a remedial action Health and Safety Plan Specification will be included. This specification will outline the minimum requirements of the contractor health and safety plan (to be developed and implemented by the selected contractor(s)) throughout remedial action activities at the Site.

The Decontamination Plan specification, which will also be incorporated into the remedial design plans and specifications, will provide specifications for preparation of procedures and plans for the decontamination of equipment and disposal of contaminated materials during remedial action. Minimum acceptable performance requirements for decontamination equipment and components will be included in the specification.

A Remedial Action Permitting Plan will be included in the Pre-Final submission. This plan, discussed in the preliminary design submittal requirements, will be finalized for Pre-Final submission.

A Remedial Action Contingency Plan, to be implemented if needed during remedial action activities at the Site, will be developed. This plan will address the following topics:

- Pre-emergency planning
- Personnel roles, lines of authority, and emergency services
- Emergency recognition and prevention
- Evacuation routes and procedures
- Incident reporting
- Emergency medical treatment procedures
- Fire, explosion, spills, and leaks
- Emergency equipment and facilities

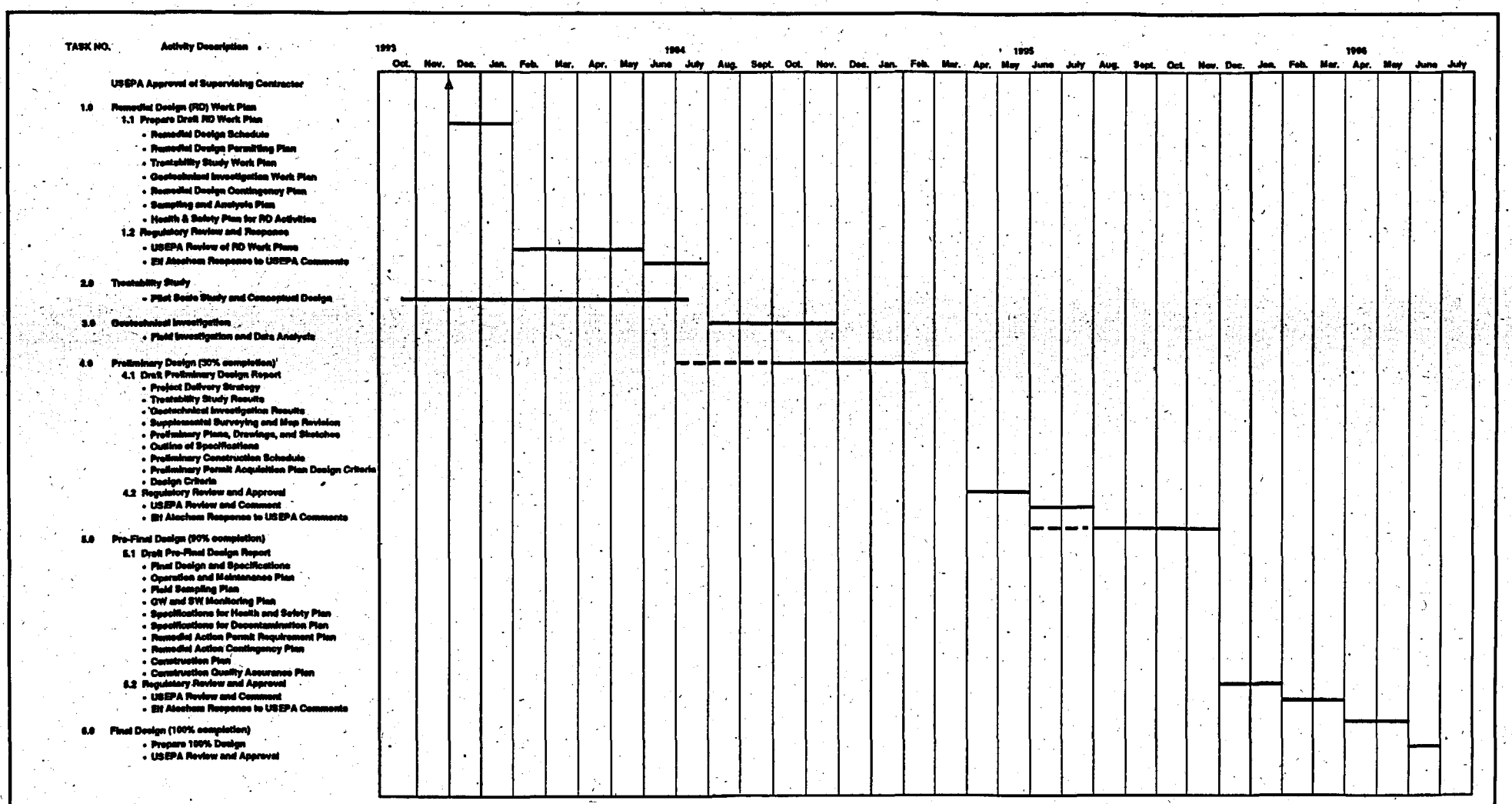
An Engineering Design Analysis and Calculations document, separate from the plans and specifications (Contractor Bidding Documents), will be prepared for submission with the Pre-Final Design. The purpose of the design analysis will be to state the logic behind design decisions and present design calculations with assumptions. Design requirements and provisions including a summary of existing conditions and contaminants, as well as cleanup criteria and other design criteria, will be presented. Supplemental information, not incorporated into the design plans and specifications, will also be included. Supplemental information will include soil boring logs, survey information, and other bases of design information.

4.2.3 Final Design

After receipt of USEPA comments on the Pre-Final Design, discussion, and revision, the Final (100 percent completion) Remedial Design will be submitted to the USEPA for final approval.

4.3 REMEDIAL DESIGN SCHEDULE

The schedule to perform the remedial design described in this Work Plan is presented in Figure 4-1. This schedule is contingent on key tasks being completed by the dates given in the schedule, including USEPA reviews. The schedule is based upon current knowledge of Site conditions and expected agency and Elf Atochem review periods on deliverables and comments, unforeseen field conditions or extended review periods may impact the overall schedule.



ELF ATOCHEM NORTH AMERICA, INC.
NATRONA LINDANE DUMP
ALSCO COMMUNITY PARK SUPERFUND SITE
HARRISON TOWNSHIP, PENNSYLVANIA

FIGURE 4-1
REMEDIAL DESIGN SCHEDULE

ECKENFELDER INC.® Nashville, Tennessee Mahwah, New Jersey

APPENDIX A

REMEDIAL DESIGN CONTINGENCY PLAN
NATRONA LINDANE DUMP/ALSCO COMMUNITY PARK
SUPERFUND SITE
HARRISON TOWNSHIP, PENNSYLVANIA

APPENDIX A
REMEDIAL DESIGN CONTINGENCY PLAN

A1.0 INTRODUCTION

The scope of this Remedial Design (RD) Contingency Plan is to protect the local affected population in the event of an accident or emergency during RD field operations at the Natrona Lindane Dump/Alsco Community Park Superfund Site, Harrison Township, Pennsylvania. This RD Contingency Plan has been prepared in accordance with with the requirements for a Contingency Plan specified in Appendix B of USEPA's Interim Final *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties* (OSWER Directive 9355.5-01, April 1990).

A2.0 PRE-EMERGENCY PLANNING

The Contingency Plan will be reviewed with project personnel along with the Health and Safety Plan (HASP) (ECKENFELDER INC., 1993) before the project start-up. Table A1-1 identifies the potentially hazardous conditions that may be associated with the specific task activities of each phase of field operations during RD. The RD Contingency Plan will be reviewed and revised as necessary by the Site Safety Officer. Prior to the start of work tasks, the local fire department (Citizen Hose Company No. 2) and medical center (Allegheny Valley Hospital) will be contacted in writing by the Project Health and Safety Officer informing them of the scope and hazards of the work tasks.

A3.0 PERSONNEL ROLES AND LINES OF AUTHORITY

The Site Safety Officer has the primary responsibility for coordinating response to emergencies on the project site. It is the responsibility of anyone observing an emergency situation to notify the Site Safety Officer. In case the Site Safety Officer cannot be reached immediately, the person observing the emergency can contact any of the following emergency services, as necessary:

TABLE A1-1

EMERGENCY RECOGNITION AND CONTROL MEASURES

Hazard	Specific Condition Location	Prevention Control
Fire/Explosion	Borehole; wellhead; gasoline fueled equipment	An alarm system Fire inspections Fire extinguisher
Air Release	Wellhead; seal opening with on site material	Water spray; foam, alarm system; evacuation routes
Spill	Drill cuttings; groundwater; DECON solvents and contaminated water/residues; well head; DECON station; staging area	Berms; dikes; sorbent materials; foams

	Phone
Ambulance	(412) 244-3355
Natrona Heights Police Department	(412) 224-3355
Citizen Hose Company No. 2 (Fire Department)	(412) 224-3355
Civil Defense Disaster Emergency Service	(412) 224-3355
Allegheny Valley Hospital	(412) 244-5100
Environmental Medicine Resources (EMR)	1-800-229-3674

A4.0 EMERGENCY RECOGNITION AND PREVENTION

Hazards as a direct result of site activities are listed in Table A1-1 with prevention and control techniques/mechanisms. Personnel working in Secure Zones will be familiar with the techniques of hazard recognition from pre-assignment training and from site-specific briefings. The Site Safety Officer is responsible for insuring that preventive devices and equipment are available to Secure Zone personnel.

A5.0 PERMIETER AIR MONITORING

Air monitoring will be conducted with either an OVA (Organic Vapor Analyzer) or an HNU (Photoionization Monitor) (10.2 and 11.7 eV lamps) adjacent to Secure Zones where borings are being installed or where other tasks are being performed. If the concentration within the Exclusion Zone exceeds 15 ppm above background on the OVA/HNU for 5 minutes, additional perimeter measurements will be taken downwind, and a higher level of PPE may be required.

A6.0 EVACUATION ROUTES AND PROCEDURES

Should an emergency requiring evacuation occur, all personnel will evacuate the area to a location pre-established by the Site Safety Officer. These locations will be located, marked, and will be at least 250 ft upwind of the Secure Area. Following the evacuation, the Site Safety Officer will initiate a head count to check that all personnel who entered the Secure Zone have successfully been evacuated.

In the event of an emergency which necessitates an evacuation of the Secure Zone, the following alarm procedure will be implemented:

- Three loud blasts on the vehicle or other horn - personnel will be expected to proceed to the designated evacuation area and will remain in the area until a re-entry to the Secure Zone is authorized.

A7.0 INCIDENT REPORTING

Following an accident or incident, an incident report will be completed by a responsible individual at the scene. Information in the incident report will include, at a minimum, the following items:

- Name(s) of individuals involved or witnesses
- Date and time
- Exact location
- Description of incident
- Type of exposure suspected or nature of injury
- Nature of emergency response actions
- Corrective measures taken to prevent repeat of the incident

Incident reports will be filed with the Elf Atochem Project Coordinator and ECKENFELDER INC. Corporate Health and Safety Officer.

Further, in the event of a hazardous material spill or chemical release above the reportable quantity, the appropriate Federal and State agencies will be notified. Notification will be made through the Elf Atochem Project Coordinator.

A8.0 EMERGENCY MEDICAL TREATMENT PROCEDURES

Any individual who becomes ill or is injured while working within the exclusion zone must be decontaminated to the maximum extent possible. Should the injury or illness be minor in nature, full DECON will be administered prior to transport to a medical facility. If the individual's condition is serious, a partial DECON should be completed (i.e., complete clothing removal and redressing in clean overalls or wrap the individual in a blanket). First aid should be administered while awaiting an

ambulance or paramedic. Injuries and illnesses will be reported immediately. Any vehicle used to transport contaminated or potentially contaminated personnel will be decontaminated as necessary.

A8.1 Fire or Explosion

In the event of a fire or explosion, the fire department, the Site Safety Officer, and Project Coordinator should be notified immediately.

A8.2 Spill and Leaks

Personnel will report spills or leaks to the Site Safety Officer and the Elf Atochem Project Coordinator. Should a spill or leak occur which is a threat to human health or a release to environment (air, water or soil), the person observing the spill will:

- Evacuate or request an evacuation of any persons at risk.
- Inform Project Coordinator and/or Site Safety Officer immediately.
- Locate the source of the spillage and stop the flow if it can be done safely.
- Begin containment and recovery of the spilled materials utilizing appropriate response methodology and PPE, only if safe to do so.
- Contact local emergency agencies if necessary.
- Ensure that proper decontamination occurs during and after cleanup.

A9.0 EMERGENCY EQUIPMENT AND FACILITIES

The following equipment will be available at the Site Secure Zone:

- First aid kit
- Fire extinguishers
- Nitrogen Gas System (on call)
- Portable eye wash

- Air horn

A10.0 MEDICAL EMERGENCY RESPONSE

In the event of a medical emergency, the injured person will be transported to the closest medical facility. The nearest medical facility is the Allegheny Valley Hospital in Natrona Heights, Pennsylvania. To travel to the Allegheny Valley Hospital, travel from the Site to Freeport Road, turn left on Freeport Road and go to Carlisle. Turn right on Carlisle and proceed to the hospital.

A10.1 Required Emergency Project Contacts

The following persons, departments, or organizations designated by "*" must be contacted when an emergency occurs. Other individuals based upon nature of the emergency listed should be notified as soon as possible. The Site Safety Officer shall, as time permits, ensure these contacts are made and report to the ECKENFELDER INC. Project Manager of this activity.

- Elf Atochem North America
  Joe Schinski, Project Manager and Site Contact/Coordinator

- ECKENFELDER INC.

Jeffrey L. Pintenich	615-255-2288	615-832-4943
Gary W. Martin*	615-255-2288	615-377-6174
Paul D. Mutch	201-529-0800	201-875-7936
Jane E. Lyons, CSP*	615-255-2288	615-822-8046
Jack Musterman	615-255-2288	615-758-7891
Margaret L. Hunter	615-255-2288	615-791-6331

- Frank Vavra 215-597-0676

- Terry Goodwald 412-422-4000